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My research employs a new technique in personalized medicine called cellular reprogramming. By transfecting a patient's terminally differentiated cells with certain reprogramming factors, we are able to generate stem cells. These patient-matched induced pluripotent stem cells (iPSCs) can then be differentiated to various cell types, including those that may be affected by disease. Through this process of cellular reprogramming, we are able to model an individual's ailments in vitro and study the underlying genetic components. For example, a member of our lab has obtained skin samples of patients suffering from familial hypercholesterolemia, produced iPSCs, and can assay for drugs that specifically reduce cholesterol levels in each patient without causing toxicity.